THE BOREAL BELOW

Mining Issues and Activities in Canada's Boreal Forest

EXECUTIVE SUMMARY

May 2008

MINING CANADA'S BOREAL

Canada's boreal forest stretches in a multi-hued green band from the Yukon Territory to Newfoundland, constituting 77% of Canada's forest and over 90% of the country's remaining large, intact forest lands. Canada's boreal represents 25% of the world's remaining intact forests and hosts millions of migrating song birds and some of the largest caribou herds in the world, as well as the large predators that depend upon them. The boreal forest builds soil, filters water, captures carbon and produces oxygen. While difficult to determine the monetary value of these life-giving functions, in Canada they have been quantified as nearly $ 92.8 billion worth of environmental services.[1]

Mining, forestry and hydroelectric development are the most significant industrial activities in Canada's boreal. As transportation has improved and resources have become depleted in other regions over the last 50 years, development in the boreal has been rapid, poorly controlled, and poorly planned.[2] These activities provide infrastructure in remote areas and interact with each other to "open up" a region. The development is taking place in Canada's least conserved landscape,[3] which both the country's leading scientists and Senate subcommittees have identified as at risk of being lost in the next half-century unless industrial development is drastically curtailed.[4]

An estimated 80% of the mining in Canada occurs in the boreal forest region. Canada's boreal forest is host to approximately 7,000 abandoned mines, 72 operating mines and 14 smelters. In 2007, approximately 98 projects were in "advanced exploration" or under development, with thousands more properties being prospected under mineral claims.

An unholy marriage exists between the unparalleled impacts of mining and the unique qualities of the boreal forest region. The acid-laden mine effluent and acid-laced air discharges of the mining industry overlay the thin and naturally acidic soils of the boreal, adding undue stress to these forest ecosystems. The slow growing and slow healing taiga is brutalized by the earth-stripping activities of diamond and mineral exploration, with crews moving tens of thousands of cubic metres of the thin boreal soils each day in the search for pretty gems and minerals.

Gold mine, Yellowknife, Northwest Territories, © Alex Doll

1 Anielski, Mark and Sarah Wilson. *Counting Canada's Natural Capital: Assessing the Real Value of Canada's Boreal Ecosystems*. Pembina Institute, November 2005.
2 Schindler, David W. *Sustaining Aquatic Ecosystems in Boreal Regions*. Conservation Ecology 2(2):18. 1998.
3 Nikiforuk. *Ecologist Gives Canada's Boreal Forest 50 Years to Live*.
4 Ibid.

THE MINING SEQUENCE

Gold, silver and ore mine, Northern British Columbia, © Deb Burkhardt

Mining has stages in its development, operation and closure, dubbed by both industry and regulators as the mining "sequence:" the initial prospecting and staking of the mineral claim; the exploration and evaluation of the claim for its mineral potential; the development and operation of the mine; the milling and refining of the ore into the sought-after metals; the closing out of the mine; and, in most cases, the perpetual care of the site. Each stage of the mining sequence has associated environmental impacts. All stages can result in disturbance of the land surface and the terrestrial ecosystems which it supports, as well as the aquatic ecosystems into which they drain. Surface disturbances come not only from mineral exploration and the mines themselves but also from the large areas needed for the disposal or dumping of mine tailings and waste rock.

An estimated 40 million hectares have been used for mining purposes. This figure excludes most of the related infrastructure, such as road systems, power-lines and power generation projects. An average of 20 million hectares are staked each year in new mineral claims; a considerable percentage of those are expected to move into exploration, with all of the attendant surface impacts.

Prospecting and Staking

The mineral industry in Canada enjoys almost unrestricted land access. Exploration across the boreal forest takes place under a "free entry" tenure system, except in Alberta, where a discretionary mineral tenure system is in place.[5] Anyone with a prospecting licence can enter a property to look for minerals.

The free entry system is based upon the premises that:

- mining prevails over private property interests;
- mining is the highest and best use of Crown lands;
- all Crown lands are open for staking and mineral exploration unless they are expressly excluded or withdrawn by statute;
- mining prevails over Aboriginal land rights;
- mineral tenures are appropriately granted on a first come first served basis; and

ANGRY LANDOWNERS TAKE ACTION

Rob Westie and his family had built their dream home on their dream property, nestled on the side of Bluenose Mountain just north of Vernon in the British Columbia interior. In January 2006 life changed abruptly when an eccentric neighbour staked the mineral rights and developed an irregular habit of lurking about the family home. Initial complaints to police were met with inaction; local police said there was nothing they could do because the neighbour had secured the mineral rights to Westie's land and much of the surrounding area. Under Canada's "free entry" mining system, prospectors and mining companies can legally cut down trees, dig trenches, drill holes and even use heavy machinery to take away thousands of tonnes of rock samples, all without the permission of a landowner.

Westie has since assembled a group of angry landowners and neighbours. His B.C. Landowners Rights Group has drafted a letter explaining the lack of landowners' rights and the goals of the organization. The BCLOR's backcountry revolt may have a broader base than first meets the eye – the number of landowners whose rights have been threatened or obliterated has exploded in recent years, and environmental activists and environmental law groups have taken note.[6]

(Summarized from story printed by The Tyee, June 14, 2006)

5 Campbell, Karen. "Undermining Our Future: How Mining's Privileged Access to Land Harms People and the Environment," West Coast Environmental Law Association, January 2004.

6 Environmental Mining Council of B.C. *More Precious than Gold: Mineral Development and the Protection of Biological Diversity in Canada*. Prepared on behalf of World Wildlife Fund Canada. 1998.

- mineral potential is so valuable that it warrants leaving the staked area essentially unregulated and potentially unusable for other resource interests.[7]

All players are welcome in the free entry system; past performance and a track record of environmentally damaging practices by particular operator are not factors. As a result, mine operators who have left a trail of destruction in their wake are treated like any other prospectors when they stake claims.

Individuals and companies gain the exclusive right to search for minerals on an exploration property and to develop any discoveries, by staking a claim. In most cases, physical staking of a property takes place on the ground (known as "claim staking"). Several provinces now allow "map staking" or "internet staking" in some or all regions. Map staking allows a company or individual to place a mineral claim on an area, establishing a form of tenure, simply by identifying the area on a map and paying a small fee.[8]

Exploration and Evaluation

The first steps of exploration may overlap with work done during prospecting and staking: geological mapping, geophysical surveys and geochemical sampling, followed by physical sampling. Physical sampling includes soil and sediment samples, bulk samples and drilling. Bulk samples begin to blur the line between mineral exploration and mining, as bulk sampling often requires sinking a mine shaft.

Territorial governments have improved the regulation of mineral exploration in recent years and often require environmental assessments and public consultation prior to advanced exploration; however, most provinces have few or no regulatory requirements for the early stages of exploration. For example, an exploration project in Ontario can surface strip up to 10,000 square metres or 10,000 cubic metres of material without a permit as long as the stripped areas are separated by at least 500 metres from each other and are at least 100 metres from the nearest water body.[9]

Additionally, the mine infrastructure often begins to develop while feasibility studies are still being done. The mine site will be designed, including: mine production and processing facilities; waste management areas for waste rock, tailings, and solid waste and sewage; and administration buildings. Shaft sinking, pit excavation, road building and construction of surface facilities will occur. Mine infrastructure will use and impact much more land than the mine itself.

Development and Operation

The operation of a mine includes construction of its infrastructure and results in impacts to air, land and water through waste rock, tailings and water contamination. Roads rank as the supreme disturbance at a landscape level. An estimated 30% of the Boreal Forest is now within one kilometre of a road or access route.[10] Roads significantly affect animal distribution by fragmenting populations. For some species, roads are impassable barriers.

All mines create waste rock because of the need to remove a large volume of rock that is not ore-bearing in order to get to the ore body. Waste rock can also include low grade ore. In both underground and open pit mines, waste rock material ends up on the surface where it must be managed.[11] Waste rock is created at a rate of one million tonnes per day in Canada. To mine one tonne of gold, between one and three million tonnes of waste rock are generated.

During a mine's operational period, water is pumped out to keep the mine dry and allow access to the ore body. Pumped water may be used in the extraction process, sent to the tailings impoundments, used for activities like dust control, or discharged as waste.

7 Campbell, Karen. "Undermining Our Future: How Mining's Privileged Access to Land Harms People and the Environment," West Coast Environmental Law Association, January 2004.
8 Science North. On-line glossary of mining terms. www.sciencenorth.on.ca/learn/groundwork/CIMeng/glossary/gl stakd.htm.
9 "Definition of Advanced Exploration," Ontario Ministry of Northern Development and Mines. http://www.mndm.gov.on.ca/mndm/mines/mg/advex/advdef_e.asp.
10 Boreal Forest Network. A Global Crisis in the Making.
11 Canadian Parks and Wilderness Society, Saskatchewan, http://www.cpaws-sask.org/boreal_forest/mining_facts.html.

The water can be very acidic and laden with high concentrations of toxic heavy metals. Estimates of gross water use in Canada for the extraction stage of metal mining are 1,542 million cubic metres per year.[12]

Mineral Processing

In the processing stage, ore is crushed and ground in the mill, and valued metals are separated from waste. Common pollutants from metal mines and milling processes include arsenic, cyanide, copper, selenium, mercury, cadmium, lead, nickel and zinc. Chemicals used in high volumes at mine sites include ammonia, calcium chloride, xanthates, chlorine, hydrochloric acid, copper sulphate, sodium cyanide and sulphuric acid. Many of these chemicals and heavy metals have been declared toxic under the Canadian Environmental Protection Act. Impacts on water and air quality intensify throughout milling and refining.

Tailings are a mixture of water, finely ground waste rock, and residues of all the chemicals used in the ore processing. Management of mine tailings has generally involved creating an impoundment through constructing a series of dams or taking a natural valley – or lake – for disposal. An estimated 417,813 metric tonnes of mine tailings are generated each day in Canada.[13]

Refining and smelting metals includes the release of sulphur dioxide (SO_2) and heavy metals which can contaminate soil and waterbodies and impair health. Regulation of air quality is usually a matter of provincial jurisdiction and regulatory regimes do not prevent substantial releases of SO_2 and other harmful substances, including arsenic, nickel, cadmium and lead.[14]

Approximately 800,000 tonnes of SO_2 are emitted annually from smelters in Canada. Communities in Sudbury, Thompson, Rouyn, Flin Flon, Belledune, Trail and other smelter towns bear the brunt of the pollutants and are particularly at risk of having elevated rates of asthma, cancer and other pollutant-related ailments. Because many of these pollutants, such as SO_2 and mercury, are long-distance travellers, their influence on environmental and human health is exerted hundreds and even thousands of kilometres from their source.

Mine Closure

When the economic ore body has been exhausted, the mine has to be closed. It is important to note that there has never been a major mine in Canada that has been fully closed out and fully returned to a productive alternative, far less to its original state.

Mine closure and reclamation is an expensive and lengthy process, with uncertain results. If closure plans for the mines do not include appropriate disposal or treatment of massive piles of toxic waste rock and tailings, or do not appropriately evaluate the risk of groundwater contamination to the area through seeps from the tailings impoundments and underground workings, the actual closure costs will be far greater than the initial estimate; alternatively, the closure work will be limited, resulting in further environmental impacts.[15]

After closure, long term monitoring is needed to ensure that remediation efforts are successful and to identify new or emerging environmental concerns. Most major mines require perpetual care to monitor structural stability of the site. Many mines also require water treatment long after closure, some virtually into perpetuity.

Cost estimates vary, but a conservative estimate in the mid 1990s placed the price to clean up all abandoned mines in Canada at $6 billion or higher.[16] More recently, the federal government estimated that the cost for cleanup of abandoned mines in the northern territories alone would be $555 million (excluding the full cost of clean-up of the Faro Mine or the arsenic trioxide at the Giant Mine).[17]

12 Survey of water use in the mineral extraction and associated manufacturing industries (million cubic metres water/year), 1996 (Environment Canada, 2002).
13 2005 Mining Source Book as referenced by Environment Canada Environmental Scan, 83.
14 "National Pollutants Release Inventory, air discharges for INCO, Falconbridge, Hudson Bay Mining and Smelting." 1998.
15 Undermining Superior, Northwatch, 2001.
16 Globe and Mail. "Mining Association of Canada estimates the cost of cleaning up abandoned mines across our country to be $6 Billion." September 24, 1994.
17 AG report: Commissioner for Environment and Sustainable Development. 2002 Report to Parliament, paragraph 3.81.

Acid Mine Drainage and Metal Leaching

Crushing rock and grinding ore into tailings exposes huge quantities of waste rock materials to air and water. When metal sulphides in the waste materials are thus exposed, there is potential for acid generation. This phenomenon is known as Acid Mine Drainage (AMD).

AMD can have a devastating environmental effect when discharging into headwater streams or water bodies. Like many other pollutants, AMD can reduce the diversity and abundance of macroinvertebrates, as well as cause changes in community structure. Most organisms have a well-defined tolerance range, but when the habitat becomes more acidic the effect can be lethal. For example, the primary causes of fish death in acid waters are loss of sodium ions from the blood and loss of oxygen in the tissues; acid water also increases the permeability of fish gills to water, adversely affecting gill function.[18]

Leaching metals can increase the toxicity of mine drainage and also act as metabolic poisons. Iron, aluminium, and manganese are the most common heavy metals which compound the adverse effects of AMD. Trace metals such as zinc, cadmium, selenium and copper, which may also be present in mine drainage, are toxic at extremely low concentrations and may act synergistically to suppress algae growth and affect fish and benthos. Predicting the potential of Acid Mine Drainage/Metal Leaching (AMD/ML) from mine waste is a complex exercise.

AMD/ML may not start for decades after mine closure and can persist for hundreds or thousands of years. Technologies for dealing with AMD/ML exist, but at present, there is no "walk away" solution – a mine that is generating or has the potential to generate AMD/ML must be monitored and treated in perpetuity.

Iron mine, Quebec, © Garth Lenz

18 Earle, J. and T.Callaghan. *Impacts of Mine Drainage on Aquatic Life, Water Uses, And Man made Structures*. Department of Environmental Protection, Harrisburg, PA 17105.

An estimated 20% of mine waste in Canada is acid producing or potentially acid producing.[19] Between 1994 and 2004 an annual average of 264 million tonnes of ore was mined from metal mines in Canada. The costs of AMD treatment are site specific. A 1995 report estimated the cost of treating acid mine generation at $194 per tonne of waste rock.[20] Based on the above information, a current estimate for treating Canada's inventory of acid generating mine wastes would be in the range of $15 billion.

Mixing Zones

At a national level, the mining and metal sector consumes over 2 billion cubic metres of water annually. While the mining industry describes its use of water as temporary, the fundamental fact remains that clean water goes in and contaminated water comes out. Surface water becomes contaminated in 70% of cases studies, and groundwater becomes contaminated in 65% of case studies[21] While water can become polluted from many aspects of the mining sequence, effluent from the mine and mill are perhaps the greatest source of contamination.

Mixing zones are an area of lake or river, usually immediately downstream from an effluent pipe, in which exceedences of water quality objectives are allowed by permit. Using the old axiom "dilution is the solution to pollution," mixing zones rely on the assimilative capacity of the natural environment to absorb the impact of contaminants. Polluted water is diluted by mixing it with the fresh water of a living lake or stream.

Dilution is a common approach in managing waste water at Canadian mine sites.[22] Most jurisdictions across Canada permit the use of water bodies as mixing or dilution zones for toxic effluent.

Iron mine, Quebec, © Garth Lenz

ACID MINE DRAINAGE AT KAM KOTIA

The Kam Kotia Mine operated from 1942 until 1972 when it was abandoned, becoming a public liability. The site includes a partially filled open pit, old mill remnants, 200,000 tonnes of waste rock, and over 400 ha containing 6 million tonnes of impounded and unimpounded tailings.

The Kam Kotia mine tailings are reported to have the highest tailings sulphide concentration in Canada and are strongly acid-generating. Surface water runoff from the site is very acidic, and has been reported at pH 1.8 - 2.5, containing elevated levels of arsenic, zinc and copper. It has been estimated that 35,000 tonnes of tailings are currently clogging the Kamiskotia creek bed, much of which is flushed out and replenished on an annual cycle.

By 2006, approximately two-thirds of the rehabilitation required at the Kam Kotia site had been completed, at a cost of approximately $38.5 million. Projects for the 2006-2007 fiscal year included the installation of a dry cover over the northwest section of tailings for a cost of $12.3 million and the operation of a water treatment plant under a five-year contract for a cost of $1.8 million.[23]

19 Feasby, G. and R.K. Jones. *Report of Results of a Workshop on Mine Reclamation*. Toronto, Ontario: March 10 11, 1994. Workshop Hosted by the IGWG Industry Task Force on Mine Reclamation. August 1994.
20 "Economic Evaluation of Acid Mine Drainage Technologies," MEND Report 5.8.1, January 1995.
21 Ontario Ministry of Northern Development and Mines. Press Release. 09/10/06.
22 "Threats to Water Availability in Canada," *NWRI Scientific Assessment Series*, No. 3, Environment Canada, 2004, www.nwri.ca/threats2full/ch9-2-e.html.
23 U.S. Environmental Protection Agency. *Human Health and Environmental Damages from Mining and Mineral Processing Wastes*. Technical Background Document. Based on an analysis of 66 case studies. 1995.

Mining Communities in the Boreal

While mines provide employment and economic input to communities where they are located, the operations are strongly tied to commodity prices in a cyclical market. Mining is heavily dependent on outside capital and external markets, with the corporate structure both physically and socially removed from the local community. Economic benefits related to mining are usually short term since minerals are non renewable resources which inevitably become exhausted. Even before an ore body is depleted, the mine may shut down due to low global metal prices or shareholder attention and investment being drawn elsewhere.[24]

The National Roundtable on the Environment and Economy (NRTEE) estimates that 80% of Canadian mining takes place in the Boreal, with 80 communities relying on mining or mineral-related activities for their economic survival, producing 75% of the country's iron, nickel, copper, gold and silver.[25] The number of metal mining jobs in Canada in 2002 was 23,944,[26] dropping from a 40-year high in 1974 of 70,000.[27] Even towns with operating mines have seen their populations age and dwindle.[28]

Iron mine, Quebec, © Garth Lenz

Mining communities share a number of troubling social characteristics, including higher levels of violence against women, alcoholism, and family breakdown.[29] Mining is dangerous and destructive work with a high incidence of industrial disease – cancers, white hand, silicosis – and injuries; many mine workers are unwell or disabled. Additionally, higher incidences of cancer, asthma and other respiratory diseases appear in family members and local residents.[30]

The Governments

There is no one "Canadian Mining Law." Mining is largely provincial and territorial jurisdiction, so there are effectively 13 different sets of laws; coal, uranium and quarries all have separate and different laws from metal mining. In most jurisdictions, laws and regulations for air and water protection are additional to those related to mining. The federal government retains powers to legislate ocean and inland fisheries, navigable waterways, criminal law, inter-provincial trade and commerce and "Indians and land reserved for Indians" (including Métis and Inuit). It can also establish National Parks. The federal government regulates uranium mining through the Canadian Nuclear Safety Commission. The Canadian Environmental Protection Act regulates mercury, asbestos emissions, smelter emissions, and some other toxins.

Since provinces are responsible for the management of mineral resources, they are also responsible for most mine permitting. Historically, provincial mining laws have shared many characteristics due to the fact that they are based on Crown ownership and exploitation of mineral resources under the Canadian Constitution. Most mining laws set out the manner in which the Crown may dispose of its minerals and others may

24 Environmental Mining Council of B.C. 2001. *Mining in Remote Areas: Issues and Impacts*. Produced for MiningWatch Canada / Mines Alerte.
25 http://www.nrtee-trnee.ca/eng/publications/boreal-futures/boreal-futures-eng.pdf.
26 Mining Association of Canada, Facts and Figures 2002, Table 15. The mining industry usually includes quarrying, coal mining and non-metal mines when they talk about employment in mining, which doubles the figure. If smelters and refineries are added to the figure, the number is increased by 20,811.
27 Jen, Lo-Sun. 2000. "Canadian Mine Openings, Closings, Expansions, Extensions and New Mine Developments in 2000." http://www.nrcan.gc.ca/mms/cmg/content/06.pdf and MiningWatch Canada and the Pembina Institute. *Looking Beneath the Surface: Assessing the Value of Public Support for the Metal Mining Industry in Canada*. MiningWatch Canada, Ottawa.
28 Reid, L. 1986. *Ghost Town/Boom Town*. Marathon, Ontario in Equinox, Fall, p. 90-95.
29 Kuyek, Joan and Coumans, Catherine. *No Rock Unturned: Revitalizing the Economies of Mining Dependent Communities*, p. 11.
30 CCSG Associates. Overburdened: *Understanding the Impacts of Mineral Extraction on Women's Health in Mining Communities*. MiningWatch Canada, 2004.

Diamond mine, Northwest Territories, © Nick Sibbeston

obtain rights to them.[31] Regulatory controls over the environmental and social impacts of mining are generally enshrined in other laws: Environmental Assessment, Water Acts, Planning Acts, etc.

The Mining Industry

The mining industry in Canada has experienced a tremendous decade, including a seven-year downward slide in markets and commodity prices that started in 1997. By 2005, a resurgence in demand for minerals and metals strengthened prices. The Canadian mining industry went from bust to boom. Over the next few years, mineral exploration exploded and a new generation of mines began coming on-stream, while several older mines were re-opened or expanded. A sweeping set of foreign acquisitions and mergers have changed the face of the industry in Canada.

The Canadian mining industry is currently in a period of great expansion, as evidenced by record spending and record profits. Corporate operating profits in the Canadian mining industry were $7.0 billion in 2005, compared to $4.2 billion in 2004, $1.6 billion in 2003 and $1.7 billion in 2002.[32] Spending in mineral exploration was expected to reach almost $2 billion in 2007, the fourth straight year of record-breaking levels of investment in the search for new mines. The spending increases are being observed in almost every jurisdiction across Canada, with the highest spending in exploration for precious metals, followed by base metals, diamonds and uranium.

The Mining Association of Canada (MAC) plays a major role in supporting its members in their efforts to affect Canadian regulation of the mineral sector, as well as public and government perception of the mining industry. The Association's 29 members represent the major players in the base and precious metals market. While MAC has traditionally represented the senior mining companies, their membership has diversified over the last decade and now includes a mix of senior companies such as Barrick Gold, mid-tier companies such as Aur Resources, and junior companies such as Canadian Zinc.

The Prospectors and Developers Association of Canada (PDAC) is another major national industry organization. In existence since the early 1930's, PDAC purports to speak on behalf of 6,000 individual and 800 corporate members in the mineral exploration and development industry. PDAC's 48-member board includes a wide range of representation, from individual prospectors or consultants to the likes of Barrick Gold and Teck-Cominco, along with a grab-bag of law firms, junior and mid-tier companies, mining industry service providers and a few Aboriginal representatives.

The Canadian Aboriginal Minerals Association (CAMA) has operated for fifteen years, delivering its message of "participation" for Aboriginal communities in mineral exploration and development. CAMA describes itself as an "Aboriginal, non-profit organization which seeks to increase the understanding of the minerals industry, Aboriginal mining and Aboriginal communities' paramount interests in lands and resources." However, its membership is comprised of "interested Aboriginal communities," plus mining companies, governments and suppliers.

31 Castrilli, Joseph F. "Environmental Regulation Of The Mining Industry In Canada: An Update Of Legal And Regulatory Requirements," Water and Duncan Gordon Foundation, 1999.
32 "Highlights In The Canadian Mining Industry - Corporate Developments," Canadian Mines Yearbook. 2005.

ABORIGINAL PEOPLES AND THE MINERAL SECTOR

Aboriginal peoples are the original inhabitants of the Boreal. They include the Innu of Labrador; the Ojibway of Northern Ontario; the Cree of Northern Québec, Ontario, Manitoba, Saskatchewan and Alberta; the Dene of northern Saskatchewan, the Northwest Territories and the Yukon; the Tlingit, Tse Keh Nay, Gitksan and Tahltan peoples of northern British Columbia; and the Inuit of the far north. They have lived with the land since time immemorial.

In mineral development, impacts are borne first and foremost by Aboriginal peoples. In some cases, they may have been removed from the land or relocated to other parts of their traditional homelands many decades ago; these relocations were often motivated by an interest in mineral or other natural resource development, such as the older mining "camps" of Timmins or Yellowknife where mining has been taking place for almost a century. In other cases, the impacts are more recent, and may include relocation, loss of the land, or inability to live on the land due to displacement, disposition or contamination from mining.

Mackenzie Valley, Northwest Territories© Garth Lenz

Numerous court cases are giving definition to and have upheld Aboriginal and treaty rights, most notably the Sparrow decision in 1990, Delgamuukw in 1997, the Haida and Taku decisions in 2005, the Mikisew decision in 2005, and the Musqueam decision in 2007. However, they have not recognized a veto for Aboriginal peoples over developments they do not want, and many challenges remain in having those rights recognized by both government and industry in the day-to-day struggles with mine development.

Over the last decade, the negotiation of Impact Benefit Agreements (IBAs) and participation in environmental assessment processes have produced some positive results in addressing First Nations' concerns about impacts of mining on the environment, aboriginal lifestyles, and the resource drain out of their territory. Broadly speaking, IBAs describe anticipated negative impacts of a proposed project and what will be done to mitigate the impacts and/or provide compensation. They also identify benefits the project is expected to bring to a local community, and can include commitments from the company on local employment levels, revenue sharing, training and scholarship programs, and commitments that the company or mine operator will contract services or supplies locally.

A Call For Change

One public opinion poll after another over the last two years has shown increasing levels of public concern over the environment and growing dissatisfaction with the environment-related performance of government and industry. In 2006-2007, environmental issues overtook health care as Canadians' top concern.[33]

Good decisions can and are being made – decisions based on the public interest and long-term sustainability. But, regrettably, many decisions are still being made based on other interests or priorities. Where do we go next? Imagine the day when:

33 "Public Opinion Research in the Government of Canada: Highlights of Key Public Opinion Research Projects," as found at http://www.tpsgc-pwgsc.gc.ca/por/text/rpt06-07-06-e.html.

- Aboriginal rights to land and natural resources are consistently recognized and Aboriginal peoples are engaged in decision-making early and equally;
- mineral rights are granted through a planning process that considers a variety of possible land uses and their compatibility;
- Environmental Assessments are comprehensive and effectively evaluate projects and policy from the perspective of long-term sustainability; and
- regulations and pollution limits are based on protecting human health and the environment; monitoring for environmental effects and compliance ensures effective implementation.

Currently, Canadians are organizing to demand the regulatory changes that will make this possible: changing provincial mining acts to end the Free Entry system; demanding the regulations and government staff we need to protect air, land and water; insisting on an effective public voice in Environmental Assessments, that must be based on the full ecological and social costs of proposed mines; and seeking to ensure that mining companies are held responsible for remediating the entire mine site at closure, including the mine itself, infrastructure, wastes and economic footprint.

To protect the boreal forest and its communities for future generations, we need to support these forces for change and work together to make this vision a reality.

Gold mine, Quebec, © Garth Lenz

PROPOSED KEMESS NORTH MINE

In September 2007, the Kemess North copper-gold mine was found by a Joint Panel Review Environmental Assessment to "not be in the public interest." This was the first mine in Canadian history to be turned down by a federal/provincial EA.

Northgate Minerals proposed building a 90 m high dam to flood an alpine valley and use Duncan Lake, known as Amazay Lake to First Nations, for a tailings impoundment. The lake is shared by four First Nations and is sacred to them.

First Nations had been frustrated that only one option was seriously being reviewed – the use of Duncan Lake for a tailings impoundment. Moreover, the environmental assessment hearing began before they had received a funding agreement and separate consultation.[33] Grand Chief Pierre of the Tse Keh Nay explained: "Our people don't believe it is possible to keep all that poison contained in a dam at the top of the watershed. The company will make their millions and leave and we'll be left wondering when the dam will fail and poison the rest of our water."[34]

Despite the area's significance to First Nations and the project's predicted environmental effects, there was no traditional ecological knowledge informing the Environmental Impact Assessment (EIA).[35] First Nations also criticized the archaeology and fish studies conducted by the proponent.[36]

34 Tse Keh Nay. Press Release. "First Nations Speak at Kemess North Hearings Under Protest: Call on Governments to Protect Environment and Act Honourably." October 30, 2006.
35 Ibid.
36 MiningWatch Canada. *Comments of MiningWatch Canada on the Environmental Impact Assessment of the Kemess North Mine*. January, 2006.
37 Tse Keh Nay. Press Release. "First Nations Hold Ceremony and Vow to Protect Amazay (Duncan Lake)." August 29, 2006.

MiningWatch Canada

NORTHWATCH

This document is a summary of the report prepared by MiningWatch Canada and Northwatch to provide an overview of mining activities and issues, including an inventory of operating mines and a preliminary cataloguing of closed and abandoned mines and new mineral development activities, in Canada's boreal. The full report can be accessed online at www.miningwatch.ca and www.northwatch.org.

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Key Lake Uranium Mine in northern Saskatchewan

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